

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 2 of 14

IN THE CLAIMS:

1. (Original) For use in a transceiver, an adaptive data insertion mechanism for inserting data within a transport stream without destructive disturbance comprising:

a bandwidth estimator producing an estimate of future available bandwidth within said transport stream;

a scheduler prioritizing and scheduling insertion of content to be inserted within said transport stream based upon said estimate of future available bandwidth and characteristics of said insertion content; and

an insertion unit inserting scheduled insertion content within said transport stream by replacement of selected replaceable content within said transport stream to form a new transport stream.

2. (Original) The adaptive data insertion mechanism as set forth in Claim 1 wherein said bandwidth estimator produces said estimate of future available bandwidth from periodic bandwidth utilization measurements for said transport stream and information regarding current and future programming to be transmitted by said transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 3 of 14

3. (Original) The adaptive data insertion mechanism as set forth in Claim 1 wherein said insertion unit replaces selected packets within said transport stream which include one of one or more selected packet type identifiers with packets for said insertion content while passing packets which include packet type identifiers other than said selected packet type identifiers to form said new transport stream.

4. (Original) The adaptive data insertion mechanism as set forth in Claim 3 wherein said insertion unit replaces null packets within an MPEG-2 transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 4 of 14

5. (Original) A transceiver comprising:

a input connection receiving an incoming transport stream;

an output connection from which a new transport stream is transmitted, said new transport stream including at least portions of said incoming transport stream; and

an adaptive data insertion mechanism for inserting data within said incoming transport stream without destructive disturbance comprising:

a bandwidth estimator producing an estimate of future available bandwidth within said incoming transport stream;

a scheduler prioritizing and scheduling insertion of content to be inserted within said new transport stream based upon said estimate of future available bandwidth and characteristics of insertion content obtained from a source separate from said incoming transport stream; and

an insertion unit inserting scheduled insertion content within said new transport stream by replacement of selected replaceable content within said incoming transport stream to form said new transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 5 of 14

6. (Original) The transceiver as set forth in Claim 5 wherein said bandwidth estimator produces said estimate of future available bandwidth from periodic bandwidth utilization measurements for said incoming transport stream and information regarding current and future programming to be transmitted by said incoming transport stream.

7. (Original) The transceiver as set forth in Claim 5 wherein said insertion unit replaces selected packets within said incoming transport stream which include one of one or more selected packet type identifiers with packets for said insertion content while passing packets which include packet type identifiers other than said selected packet type identifiers to form said new transport stream.

8. (Original) The transceiver as set forth in Claim 6 wherein said insertion unit replaces null packets within an MPEG-2 transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 6 of 14

9. (Original) For use in a transceiver, a method of adaptive data insertion within a transport stream without destructive disturbance comprising:

producing an estimate of future available bandwidth within the transport stream;

prioritizing and scheduling insertion of content to be inserted within the transport stream based upon the estimate of future available bandwidth and characteristics of insertion content; and

inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream.

10. (Original) The method as set forth in Claim 9 wherein the step of producing an estimate of future available bandwidth within the transport stream further comprises:

producing the estimate of future available bandwidth from periodic bandwidth utilization measurements for the transport stream and information regarding current and future programming to be transmitted on the transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 7 of 14

11. (Original) The method as set forth in Claim 9 wherein the step of inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream further comprises:

replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream.

12. (Original) The method as set forth in Claim 11 wherein the step of replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream further comprises:

replacing selected null packets within an MPEG-2 transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 8 of 14

13. (Original) A computer program product within a computer usable medium for adaptive data insertion within a transport stream without destructive disturbance comprising:

instructions for producing an estimate of future available bandwidth within the transport stream;

instructions for prioritizing and scheduling insertion of content to be inserted within the transport stream based upon the estimate of future available bandwidth and characteristics of insertion content; and

instructions for inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 9 of 14

14. (Original) The computer program product as set forth in Claim 13 wherein the instructions for producing an estimate of future available bandwidth within the transport stream further comprise:

instructions for producing the estimate of future available bandwidth from periodic bandwidth utilization measurements for the transport stream and information regarding future programming to be transmitted on the transport stream.

15. (Original) The computer program product as set forth in Claim 14 wherein the instructions for inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream further comprise:

instructions for replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 10 of 14

16. (Original) The computer program product as set forth in Claim 15 wherein the instructions for replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream further comprise:

instructions for replacing selected null packets within an MPEG-2 transport stream.

17. (Currently Amended) A data transport stream comprising:

a first portion derived from a transport stream;
and

a second portion derived from insertion content, wherein a ratio of the first portion to the second portion is determined by characteristics of insertion content and an estimate of available bandwidth within said transport stream representing selected replaceable content within said transport stream and by insertion of said insertion content by replacement of said selected replaceable content within said transport stream with portion of said insertion content to form said data transport stream.

U.S. Serial No. 09/821,122
Attorney Docket No. US010134
Page 11 of 14

18. (Original) The data transport stream as set forth in Claim 17 wherein said estimate of available bandwidth within said transport stream is derived from periodic bandwidth utilization measurements for said transport stream and information regarding future programming to be transmitted on said transport stream.

19. (Original) The data transport stream as set forth in Claim 17 wherein:

said first portion further comprises packets within said transport stream which include packet type identifiers other than one or more selected packet type identifiers; and

said second portion further comprises packets for said insertion content in place of packets within said transport stream which include one of said one or more selected packet type identifiers.

20. (Original) The data transport stream as set forth in Claim 19 wherein said second portion further comprises packets for said insertion content in place of null packets within an MPEG-2 transport stream forming the transport stream.